

occasions he has been seen to leap several feet from the ground, at others to be seized with convulsive movements of the mouth, and of the muscles of the face, and sometimes to make a retrograde movement of an extraordinary kind; at other times to run up and down as if in a rabid state. Ten grains of camphor is as much as should be employed. Dr. Edwards, of Paris, injected half a drachm; his patient, in a few minutes, felt a camphorous taste, and for twenty-four hours his breath exhaled a camphorous odour. He felt an indescribable uneasiness; he was anxious, without thinking himself in danger; he shed tears involuntarily. On going down stairs to get assistance, he was surprised to find that his body appeared so light that he seemed to skim along the floor without touching it. He began to stagger, his face became pale, he felt chilly, and was attacked with a sense of numbness in the scalp; a glass of wine was given him, and he gradually recovered, but for some time his mind was singularly affected.—*Ibid.*

13. *Mode of action of Digitalis.* By G. G. SIGMOND, M. D.—It is upon the heart and arterial system that digitalis acts; it decreases the irritability of the constitution, it diminishes the frequency of action of the heart, and hence the circulation through the system is so slow, that the kidneys have more time to take from the blood the watery portion which they excrete, for we have no reason to believe that those organs are stimulated to any increased action by the herb. The physiological reasoning upon the action of digitalis has been considered to be obscure, from its having been supposed that it diminished action in one instance, and excited it in another; but I should attribute the apparently newly-acquired energy of the kidneys, not to any stimulus imparted to them, but to their having a longer period to act upon the fluid which is detained in the renal vessels. Some authors have contended that digitalis is a powerful stimulant, that it produces flushed face, hot skin, restlessness, and all the symptoms of febrile action; and this you will find to be the case where, from a diseased state of the kidneys, the due separation of the fluid from the blood does not occur, or where, from pulmonary disease, the due transpiration does not take place; for the system of circulation is slowly carried on at first, but if no elimination from the blood occurs, the whole frame is thrown into disorder, and a febrile state is produced.

Some believe that digitalis only acts as an indirect sedative, and only when it accumulates in the system, and the experiments of Jörg, at Leipsic, are referred to; the herb was given to individuals in a state of health, in doses of a quarter of a grain of powder increased to three grains. It produced upon the alimentary canal marked effects, and this also occurred to Sandrart in his trials, when the digitalis was administered in powder; but I have before observed to you, that, in this form, it is liable to produce considerable irritation of the stomach: it likewise influenced the brain, a state resembling intoxication coming on. Upon the generative system its power was strongly marked, even to the excitement of seminal excretion in the male, and symptoms similar to the premonitory sensations which females experience at particular periods.

All these phenomena may depend upon the retardation, in the capillary vessels, of the blood; Dr. Mossman, in the year 1806, was the first who drew the conclusion, from its influence on the minute arteries, and the diminution of vascular action, that it was strictly a sedative; he went so far as to state that he could obviate pneumonic inflammation with as much certainty by it as he could arrest the progress of an intermittent fever by means of the bark of cinchona.—*Ibid.*

14. *On the powers of the Digitalis in Dropsy.* By G. G. SIGMOND, M. D.—There is no remedy to which, from its effects upon the urinary excretion, the name of diuretic is given, which more certainly, speedily, and effectually evacuates the hydropic fluid than this herb. You must, when you feel it right to employ it, be, however, upon your guard; never continue it too long, and always be very wary in attempting to increase your dose: it is not a remedy to be trifled with; it produces the most appalling effects where it has been injudiciously prescribed, and has been the fertile source of fatal sorrow to those who have indiscriminately recommended it, and to those who have followed bad advice. * * * *

With regard to the peculiar state of an individual who is labouring under effusion, you will find that digitalis will not only, generally speaking, be useless, but

occasionally injurious, when there is great natural strength and vigour, which have been unimpaired by the ravages of disease, where the muscular fibre is tense, the skin hard and dry, if the individual be inclined to corpulence, if the countenance be at all indicative of determination to the head, or venous retardation, or if the habit of the bowels be slow, and difficult to be called into action.

Dr. Withering first drew the distinction of the cases of hydropic effusion in which digitalis would be found unsuccessful, and, I believe, the great majority of medical men who have been in the habit of employing it, coincide with his view, and the experience of the most acute and intelligent practitioners has, on the other hand, satisfactorily demonstrated that there are states in which it is pre-eminently efficacious. In weak, delicate, irritable constitutions, where there may be present much laxity of fibre, a thin, soft, smooth, pale skin, which in the anasarcaous limb seems to be transparent, when upon pressure by the finger on the surface there appears to be no elasticity whatever, but the impression sinks in deep, and there is no evident power of resistance; when the emaciation of the other parts of the body is very striking, where the countenance is pale, where there is feeble or intermitting pulse, when the constitution has been much broken down, more particularly if it were originally strong, sound, and robust, where any indulgence in spirituous liquors, bad habits of life, the action of mercury, or any debilitating cause, has produced the mischief,—in such states digitalis will be indicated in preference to most of the diuretics, of which I shall hereafter have to speak. You must remember, however, that it is merely the evacuation of the hydropic fluid that you will effect; but you have not advanced more than a step in the cure of disease, more particularly if that disease be connected with disordered state of the viscera, or if it be attended with paralysis. It, however, will do that which sometimes is of as much importance as any object you can have in view; it will alleviate the most distressing symptoms, and you will gain time, during which the system may be enabled to rally, and then sustain the impression of well directed energetic remedies. Many have been the contradictory statements made of the diuretic effects of digitalis, in consequence of the want of attention to these principles, which you will find to be of vital importance to you, and you will not fail in giving relief where you judiciously employ digitalis. You will frequently be astonished at the quickness with which the fluid is evacuated; but you must not be surprised at the rapid accumulation which may again take place, when you remember what I have told you, that you do not influence the disease which caused it. * * * * *

In hydrothorax arising from any obstacle to the circulation, such as hypertrophy of the heart, when it is the termination of long protracted diseases of the thorax, if they be not accompanied by disordered conditions of the valves of the heart, digitalis may be employed. In ascites, in anasarca, dependant upon disordered states of the exhalant vessels, which throw out a larger quantity of fluid than can be absorbed, you produce good effect by diminishing the impulse with which the blood is directed to the capillaries, and you present that fluid to the kidneys for a greater length of time, in consequence of which they can take up more to excrete than would otherwise be the case. In ovarian dropsy it seldom is found that digitalis succeeds; in hydrocephalus, in infancy, it is highly noxious. Few states of the system have had more diligent inquirers. Amongst them, Wells, Blackall, Parry, Abercrombie, Ayre, Yeats, Bostock, Bright, Golis, Cheyne, have most indefatigably laboured, and the analysis of the urinary fluid has been of late years looked to with the hope of obtaining a fresh source of information. Many prefer ample depletion before the exhibition of this remedy, but I think you will generally find that when you must lower the system previously, other diuretics will be more serviceable, and I would strongly urge upon your minds, as I think it a matter of deep importance, to avoid, if possible, the junction of these two means of cure. It is true that after venesection digitalis is more diuretic, but the most fatal effects have occurred from giving the herb, where blood-letting has taken place. To use an expression which I have somewhere seen,—“It kills the heart.”

During the action of digitalis for the cure of dropsy, the recumbent position is preferable, for, from the experiments of Dr. Baildon, detailed in the “*Edinburgh Medical Journal*,” for the year 1807, we learn that it decreases the action of the heart most when an individual is lying down. He observed in his own case, and

he repeated the experiment several times, that after digitalis had taken its effect, as long as he stood erect, his pulse, which was upwards of 100, had not lessened in frequency, when he sat down it became about 75, but when he lay upon his back, it fell very considerably, and became as low even as 40. Dr. Baildon found that the same effect was produced upon all those patients to whom he had thought it proper to administer the herb. This effect is one of the most astonishing facts in our history of this sedative; it is very singular that it has not excited more attention, and led to some decisive experiments. Although Dr. Baildon's trials of this interesting substance have been detailed by a vast number of authors, there does not seem to have been drawn from them that result which minute investigation would most probably afford to us in our practice.

There is almost always some degree of nausea, of languor, of uneasiness, of general irritability present, whenever digitalis is given; indeed it would almost appear to be necessary for its salutary influence to be produced, and Dr. Paris has a very judicious and a very practical remark upon this point, which I think will be fully borne out by all those who use it, that every attempt to prevent these unpleasant effects, or to correct the operation of digitalis, by combining it with aromatic or stimulant medicines, seems to be fatal to the diuretic powers of the remedy; he has likewise quoted Dr. Blackall, who objects, in some cases, to the union of mercury, digitalis, and squill; to the combination of the two latter, however, I do not think the same objections arise as to the first.—*Ibid.*

15. *Effects from the excessive use of Digitalis.* By G. G. SIGMOND, M. D.—In some individuals the miserable train of sensations that follow upon the employment of this remedy precludes the possibility of persevering in it even when we perceive that it has been successful; nausea, vomiting, excessive depression of spirits, and fainting, often prevent us from proceeding further with it, and as any attempt then to combine it with any drug that might be supposed to obviate its bad influence destroys its efficacy, we are obliged to abandon it altogether.

There is a point at which we can no longer administer digitalis; this is generally ascribed to its accumulation in the stomach, but it seems to be rather dependant upon the very low tone to which the vascular and muscular systems have been lowered, for neither by vomiting nor by purging has any portion of the digitalis been thrown off, and the same effects are visible if the endermic mode of acting upon the system have been pursued. It is generally at about the eighth dose that the baneful influence of the herb is visible, and this often happens whether the dose have been large or small, whether it have been diminished or increased, whether it have been given twice or three times in the course of the day; some curious examples are quoted by Sandrart in two papers which appeared in the "Bulletin Général de Thérapeutique," in the year 1833. They present some very extraordinary results from its continued use; his cases were principally diseases of the heart; out of fifty-seven, thirty-one had maladies of that organ, thirteen being hypertrophy without dilatation, eight hypertrophy with dilatation, and eight dilatation without hypertrophy; they fully bear out the great necessity of caution which the wisest and most experienced men of our own country have so strongly inculcated; he seems, with Dr. Halloran, Dr. Hamilton, and others, to consider it as a narcotic, first stimulating, and afterwards acting as a sedative. When the poisonous effects are produced after the symptoms of disturbance of the alimentary canal (indicated by the vomiting and purging, then vertigo, drowsiness, and frequent faintings) come on, the skin is bedewed with a cold sweat, the tongue and lips swell, profuse salivation occurs, sometimes the action of the kidneys is totally suspended, at others it is increased, with frequent desire to expel the urine, or at others inability to retain it is felt; the pulse intermits and is slow, and delirium, hiccoughs, cold sweats, confused vision, sometimes convulsions and frequent faintings follow, till death closes the scene.—*Ibid.*

16. *On the use of Digitalis in Phthisis.* By G. G. SIGMOND, M. D.—It is only in the early stages of phthisis that digitalis can be ranked as a curative agent, but it may, in its later moments, be equally important as a palliative. The high character it has obtained, has been from its having been employed before the breaking down of tubercles in the lungs; but upon a careful review of those cases which are contained in our periodical literature, as well as from an inquiry into